DOCUMENT RESUME

ED 168 721 PS 010 490

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TITLE	An Observational Study of Parental Teaching Behaviors and Their Relationship to Child Achievement.
INSTITUTION	North Carolina Univ., Chapel Hill. School of Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	Apr 79
GRANT	G007701691
NOTE	15p.; For related documents, see PS 010 487, PS 010 489-491; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 8-12, 1979)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Academic Achievement; *Achievement Gains; *Effective Teaching; Elementary School Students; *Intervention; Low Income Groups; *Parent Influence; *Parent Participation; Parent Role; Parent Student Relationship; Program Evaluation; Research; Student Improvement
IDENTIFIERS	Parent Education Follow Through Program; *Parent Teaching Behaviors

ABSTRACT

This evaluation study had two aims: (1) to compare the teaching behavior of parents who had been participating in the Parent Education Follow Through (PEFT) Program to that of parents who had not, and (2) to examine the relationship between child achievement and parents' use of the 10 desired teaching behaviors (DTBs) emphasized by the PEFT program. Subjects were 63 program families and 46 nonprogram families at two PEFT sites. All were low-income families. PEFT families were in the second year of program participation. Non-PEFT families had never been involved in a home visitation program. Two parent-child interaction situations were used to collect the data on videotape: a matching-faces activity and a book-reading activity. The Total Reading and Total Mathematics subtest scores on the Stanford Achievement Test Primary Level 1 Battery (1973) were used to assess achievement. It was found that in only one of the two communities were PEFT parents using significantly more DTBs than non-PEFT parents. In that community the number of DTBs used by PEFT parents was significantly related to both reading and mathematics achievement test scores of their children. Differences between communities may reflect different program emphases. Findings are interpreted as evidence that the way parents teach their children is related to the child's school performance. The DTBs of the PEFT program are seen to be important ones. (Author/RH)

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AERA, 1979

Session No. 17.33

An Observational Study of Parental Teaching Behaviors and Their Relationship to Child Achievement

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In most parent education programs the evaluation of the program has consisted solely of administering intelligence or achievement tests to children who are participants (e.g., Hahn & Dunstan, 1975; Karnes, Studley, Wright & Hodgens, 1968). Thus, the evaluation of the program is based solely on data obtained from children.

Other programs have included parent attitude questionnaires, home environment questionnaires and/or parent interviews as assessment instruments (e.g., Radin, 1972; Stern, Marshall & Edwards, 1971; Strom, 1974). These programs have gone beyond looking at program effects which might have occurred in the children to look at changes which might also have occurred in the reported home environment or in the attitudes of the parents. Of the over one hundred parent education programs in which the participating child is more that three years old, only five have used observation procedures to assess the teaching behavior of the parents involved in the program (Barbrack, 1970; Boger, Kuipers, Cunningham & Andrews, 1974; Kuipers, Boger & Beery, 1969; Olmsted & Ware, 1975; Wiegerink & Weikart, 1967). The results of these studies provide little support for the hypothesis that parental teaching behavior can be modified through a parent education program. However, there are problems with both the implementation and evalution of these programs.

Paper prepared for the annual meeting of the American Educational Research Association, San Francisco, California, April 8-12, 1979.

This study was supported by a grant from the United States Office of Education (Grant No. G00-77-01691) to the University of North Carolina at Chapel Hill.

One parent education program which assess both parental teaching behavior and child achievement is the Parent Education Follow Through (PEFT) Program. Since a general description of this program was given earlier in this symposium it will not be repeated here. However, one aspect of the program will be discussed as background for the present study.

The PEFT Program stresses six roles for parents: teacher of own child, adult learner, audience, employee, volunteer and decision-maker. The first role, teacher of own child is the focus of the present study and is developed through the home visit component of the program. Regular home visits (weekly or biweekly) are scheduled for each child in the program with the major activity of this home visit being the teaching of a home learning activity. Other aspects of the home visit include providing information regarding comprehensive services, obtaining feedback from the parent about last week's learning activity and discussing various parent activities.

Specific teaching behaviors are stressed by the PEFT Program. These particular behaviors called Desirable Teaching Behaviors (DTBs) were selected because they were found to relate to child growth in studies of either parent-child interaction or classroom situations (e.g., Hess et al, 1968; Soar, 1970). Each home learning activity stresses one or more of these specific teaching behaviors and during the home visit these teaching behaviors are demonstrated, discussed and integrated into the task. A listing of the ten Desirable Teaching Behaviors is presented in Table 1.

Table 1

Desirable Teaching Behaviors

1. Before starting an activity, explain what you are going to do.
2. Before starting an activity, give the learner time to familiarize himself or herself with the materials.
3. Ask questions which have more than one correct answer.

4. Ask questions which require multiple-word answers.
5. Encourage the learner to enlarge upon his or her answer.
6. Get the learner to ask questions.
7. Give the learner time to think about the problem; don't be too quick to help.
8. Get the learner to make judgements on the basis of evidence rather than by guessing.
9. Praise the learner when he or she does well or takes small steps in the right direction.
10. Let the learner know when his or her answer or work is wrong, but do so in a positive or neutral manner.

The two purposes of the present evaluation study were: (1) to compare the teaching behavior of parents who had been participating in the program to that of parents who had not been participating in the program; and, (2) to examine the relationship between the frequency of usage of parental teaching behaviors stressed by the program and child achievement performance.

Method

Subjects

The subjects for this study included program and nonprogram families in two PEFT sites. One site (A) is a medium-sized community in the Northwest (population approximately 50,000) which has been implementing the program in approximately 30 classrooms since 1968. The other site (B) is a large southern city (population over 500,000) which has been implementing the program since 1968 in approximately 35 classrooms.

In each community there is a large proportion of families from one ethnic group and the data collection was restricted to this group. In community A all families in both the PEFT and nonPEFT groups were Caucasian, while in community B all families in both groups were Black. All families in the

study were classified as low-income based on the Poverty Index of the Office of Economic Opportunity.

At the time of data collection, all children were enrolled in the first grade. For the two PEFT groups only children who had also been in PEFT kindergarten classrooms were considered for data collection. This restriction insured that the parent was currently receiving at least her second year of home visits. No family in the nonPEFT groups had ever been involved in a home visitation program. Except for two PEFT children in community A, all PEFT and nonPEFT children in both communitites attended the same schools.

Within each of the two communities all PEFT children meeting the criteria for selection were assigned numbers and lists of names were developed using a table of random numbers. Families were contacted according to their position on the list. Of 98 PEFT children eligible for the study in community A, 34 served as subjects. In community B the corresponding PEFT numbers are 70 eligible and 29 serving as subjects. The refusal rates were similar in the two communities as were the reasons for refusal; illness or inability to set up an appointment due to multiple jobs.

The total number of nonPEFT children meeting the criteria for selection was 46 in community A and 27 in community B. The same procedures were followed and within the data collection period 31 families in community A and 15 families in community B served as subjects. The percents of refusal and reasons for refusal were similar in the two communities.

Demographic characteristics for the four groups of subjects are presented in Table 2.

Table 2

Demographic Characteristics of the Four Groups of Subjects

Group Description	Group Size	Sex of Child %M	%F	Ethnic Group %C	%B
A PEFT	34	44	56	100	
A nonPEFT	31	52	48	100	
B PEFT	29	45	55		100
B nonPEFT	15	33	67		100

Procedure

Two parent-child interaction situations were used, a matching-faces activity and a book-reading activity. In the first situation the parent was asked to teach the child how to find matching faces from an array of similar faces. Standard instructions and sample sets of faces were used with the parent to help her become familiar with the task before teaching it to her child.

Four sets of faces were given to the parent to use while instructing the child. Each set included either boy's faces or girl's faces and the total number of faces in each set varied from four to eight. Variations in the faces included such features as the eyes, ears, collars, hats and hairbows. Each set of faces was placed in a separate envelope. Each face in each set had a number on the reverse side and on the inside flap of the envelope were written the numbers of the two faces which were identical. This allowed the parent and child to check the correctness of their choices. The parent was allowed to teach the child any way she wished and was allowed as much time as she wished. The matching faces activity was videotaped by local personnel with coding of the usage of the DTBs by the parent done later from the videotape.

In the book-reading activity the parent and child read Tawny Scrawny Lion by Kathryn Jackson. Standard instructions were read to the parent before the book reading began which essentially indicated that the parent could read the book with the child any way she wished. Videotapes were made of these book-reading sessions and were later coded for the usage of the DTBs by the parent.

The two different interaction activities were selected to provide settings for the occurrence of each of the ten DTBs. Each learning activity lends itself more to the occurrence of certain DTBs than to others and the particular combination of activities used in this study was selected to optimize the opportunity for the use of all ten DTBs. For example, DTB #5 (Encourage the learner to enlarge upon his or her answer.) is likely to occur during the book reading activity, but is less likely to occur during the matching faces activity. On the other hand, DTB #8 (Get the learner to make judgments on the basis of evidence rather than by guessing.) is more likely to occur during the matching-faces activity than during the book-reading activity.

Achievement test data for the children in both communities consisted of Total Reading and Total Mathematics subtest scores on the Stanford Achievement Test Primary Level I Battery (1973). This test was administered in each community as one aspect of the local evaluation.

Videotapes of the two parent-child interaction situations were filmed locally and sent to the investigator for observation and coding. The DTB observation system involved two independent viewings of each videotape with frequency counts for each DTB being made. The two observers then compared their counts and resolved differences by viewing the videotape a third time. Five college students comprised the pool of DTB observers. The five students were given five days of intensive training by the investigator and one of her

associates. Intercoder agreement was calculated for each pair of students following training and then at two other times during the actual coding of the videotapes. Intercoder agreement exceeding .80 was maintained throughout the coding.

Results

An issue in the analysis of the parental teaching behavior is whether frequencies should be used or whether these frequencies should be converted into rates to correct for varying teaching times. Data which can be examined to assist in the decision are the teaching times taken by the parents for the two activities separately and then combined. The means and standard deviations of the teaching times taken by the four groups of parents are presented in Table 3.

Table 3

Means and standard deviations of parental teaching times (in minutes) for the matching-faces activity, the book-reading activity and the two activities combined.

Group Description	Faces		Book		Combined	
	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd
A PEFT	8.56	3.69	11.20	4.10	19.76	6.28
A nonPEFT	8.83	2.76	10.79	3.47	19.62	5.28
B PEFT	8.81	3.61	12.56	5.00	21.37	5.97
B nonPEFT	9.69	5.67	12.89	7.34	22.58	9.02

As can be seen in the table, the four groups of parents are very similar in the amount of teaching time used. This similarity is surprising considering that the parents were allowed as much time as they wished for each activity. The two groups of parents from community B used more time than the parents from community A, but the difference was not significant. Because the four groups of parents had very similar teaching times, there is little to be

gained by converting the frequency counts of teaching behaviors into rates. Therefore, the measure of parental teaching style used throughout the analysis will be the number of DTBs used by the parent during the two interaction situations combined.

There are two interpretations of DTB usage and the results for each part of the study will be presented two ways, one way corresponding to each interpretation. One interpretation is that it is the total number of DTBs used which is important, not the use of each individual one. This view considers the parent-child interaction as a holistic situation and considers the total number of DTBs important regardless of how this total is composed of the various DTBs. The variable, total DTBs, could be compared to the variable, teacher talk, in the Flander's coding system. This latter variable encompasses a variety of teacher verbal behaviors. Univariate analyses with the total number of DTBs used as the dependent variable would correspond to this interpretation.

An alternative interpretation of DTB usage is that each DTB needs to be considered as a separate behavior and that it is important to see which DTBs may be related to other variables such as child achievement. Multivariate analyses using the DTBs as the dependent variables followed by univariate analyses where needed would be appropriate for this interpretation. However, the fact that the number of subjects in the various groups is small limits the usefulness of the multivariate procedures. For each part of the study, the univariate results will be presented first, followed by the multivariate results.

No reliable differences were found in the use of DTBs by the parents as a function of sex of the child; consequently, the data were combined within each group. For part 1 of the study the number of DTBs used during the

reading situation and during the faces-task situation were combined for each parent. Since different DTBs are more likely to occur during the two situations, summing across the situations provides a more general picture of each parent's use of DTBs. The mean number of times each DTB was used by each of the four groups of parents across the two interaction situations is presented in Table 4. Groups A-PEFT has the highest level of DTB usage followed by groups A-nonPEFT and B-PEFT. Group B-nonPEFT has the lowest level of DTB usage.

Table 4

Mean Number of Times Each DTB was Used by
Four Groups of Parent Across the Two Task Situations

Group Description	Desirable Teaching Behaviors										
	1	2	3	4	5	6	7	8	9	10	Total
A PEFT	--	--	5.8	7.6	0.6	--	1.5	1.2	2.5	4.8	24.0
A nonPEFT	--	--	3.3	4.0	0.3	--	1.3	0.6	1.4	3.6	14.5
B PEFT	--	--	2.0	2.1	0.2	--	1.4	0.2	2.3	5.8	14.0
B nonPEFT	--	--	1.9	1.6	0.3	--	1.8	0.1	1.6	5.9	13.2

Since the two communitites differ in several ways, e.g., geographic location, size, ethnic composition, etc., the data for each community were analyzed separately. First, a univariate one-way analysis of variance was done for each community using total number of DTBs as the dependent variable. The summary tables for these two analyses are presented in Table 5. In community A there was a significant difference in usage of DTBs between PEFT parents and nonPEFT parents ($F=6.35$, $df=1+63$, $p<.01$). In community B there was no significant difference in usage of DTBs between the two groups of parents ($F=0.05$, $df=1+45$, ns). The results indicate that in community A, but not in community B, PEFT parents are using significantly more DTBs than nonPEFT parents.

Table 5

Analysis of Variance Summary Tables for Total DTB Usage

Community A

Source	SS	df	M.S.	F
FT	1475.74	1	1475.74	6.35*
Residual	14640.41	63	232.39	
Total	16116.15	64		

Community B

Source	SS	df	M.S.	F
FT	11.67	1	11.67	0.05
Residual	8887.31	45	197.49	
Total	8898.98	46		

In line with the other interpretation of DTBs, the data for usage of each DTB across the two situations were analyzed within each community with a multivariate analysis of variance procedure. No significant differences were found in either community between the two groups of parents. However, considering the small number of parents in each groups and the large number of independent variables, the findings of nonsignificance are not surprising.

For the second part of the study, as for the first part, the usage of DTBs across the two situations were combined for each parent. Pearson product moment correlation coefficients were computed between the total number of DTBs used by the PEFT parents and their children's scores on the total reading and the total mathematics subtests of the Stanford Achievement Test. The r's were computed separately within community and separately for the reading and mathematics scores. In community A, the resultant r's were: Reading ($r=.50, p<.001$)

and Mathematics ($r=.35$, $p<.05$). In community B, the r's were: Reading ($r=-.07$, ns) and Mathematics ($r=-.06$, ns). The results indicate that in community A, but not in community B, a significant relationship exists between the number of DTBs used by the PEFT parents and both reading and mathematics achievement test scores for their children. One problem noted in the data for community B was that the children showed a restricted range of achievement scores which, of course, would influence the size of the correlation.

The corresponding multivariate analysis for this objective is the canonical correlation, with the usage of each DTB as independent variables and the two achievement scores as dependent variables. Because of the small n's in each group, the PEFT and nonPEFT groups were combined within each community for this analysis. When the data for community A were analyzed using this procedure, one canonical correlation of interest was found ($R=.50$, $.06<p<.05$). The weights found suggested that usage of DTBs #5 and #9 was positively related to the child's reading achievement socre. No significant canonical correlations were found for community B.

Discussion

The results indicate that in community A, but not in community B, the PEFT program has had a significant influence on the teaching behavior of parents. This finding, coupled with that of an earlier study conducted by the author in which it was found that in two communities PEFT parents used significantly more desirable teaching behaviors than comparable nonPEFT parents, presents a strong case for the effectiveness of the PEFT program to enhance the teaching behavior of parents.

It is evident from the table of group means and standard deviations that the difference between the two groups in community A is larger than the difference between the two groups in community B. This finding is congruent with

the emphasis given to the various elements of the program in the two sites. In community A considerable emphasis was placed on this objective of the program, while in community B less importance was attached to the objective. The results obtained do reflect, at least to some extent, the amount of time and effort devoted to this objective in the two communities.

The finding of a significant correlation between parental DTB use and child achievement in community A, but not community B, was not surprising. In community B there was a smaller range of DTB use by the parents, and, in addition, a restricted range of achievement test scores for the children. It is extremely difficult to find a significant correlation between two variables when each one has a restricted range.

The finding of a significant relationship between parental use of DTBs and children's achievement scores in community A is important for the PEFT program. This finding provides evidence that the way parents teach their children is related to the child's school performance. Furthermore, this result also suggests that the particular teaching behaviors currently being stressed by the PEFT program are important ones.

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